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“daily lectures preceding the laboratory work and describing the experiments to be performed.” It is, nevertheless, remarkable for its freedom from the pedantic, cut-and-dried, schedule method of presentation which so frequently characterizes elementary laboratory manuals, for many of Professor Sabine’s pages are interesting reading as such, and throughout, “too specific instruction” has been avoided as tending “not only to deprive the student of initiative but also to make any departure in the apparatus confusing.”

As a matter of fact the spirit of the book would have been better expressed by reversing the order of these two clauses, for “in the majority of cases the description is purposely not such as will admit of a mechanical and unintelligent interpretation.” In particular, the three-page introduction is an unusually fine presentation of the point of view from which a student should attack the work which is to follow.

The experiments described are representative of nearly the whole range of elementary physics. They should properly be preceded by the still more elementary work of a modern high-school course, as much of the apparatus requires comparatively skilful and appreciative handling. Two short appendices on “significant figures” and “graphical representation” are especially worthy of mention.

H. N. D.

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## BIOLOGY

**Clements’s Research Methods in Ecology**<sup>1</sup> is the outcome of some eight years of practical work by the author in the experimental study of the factors that determine the distribution and adaptive modifications of plants. Students of this comparatively new branch of science are to be congratulated on the possession in this volume, of a concise statement of the aims, methods, and problems of ecology. The author points out that the greater part of so called ecological study has hitherto been very superficial and of comparatively little value, largely because of a failure to recognize and measure accurately the several factors that determine for each species its particular environment.

<sup>1</sup> Clements, F. E. *Research Methods in Ecology*. Lincoln, Neb., University Publishing Co., 1905. 8vo, xvii + 334 pp., 85 figs.

The subject matter is considered under four main heads. Chapter I is devoted to a general statement of the scope of ecology. Chapter II deals with habitat, and contains a description of the instruments and methods used in recording water-content, light-intensity, temperature, soil, and other factors upon which the organism is dependent. Many of the methods described, have been elaborated by the author in his own extensive work in the West. Chapter III, the Plant, considers the general relations, adaptations, and reactions of the separate organism, while Chapter IV deals with the Formation in its various aspects, and the methods of studying the relations that groups of plants bear to one another and to their environment.

This work should do much towards establishing ecology and experimental plant evolution upon a firmer basis by pointing out the need and the method of making absolute determinations of factors, instead of the inaccurate generalizations so often recorded. The time is also not far distant when it will be a simple matter to determine, by an examination of a given soil in a given situation, what plants are best adapted to any portion of a single farm, so that agriculture may be carried on under much more precise regulations.

Although plants alone are dealt with in the present volume, many of the methods described will have to be used in a more exact study of animal habitats, and here lies a large field as yet hardly more than touched upon. The author recognizes the zonal distribution of continental forms, and proposes a new nomenclature for these as occurring in North America. Apparently, however, the areas already recognized and named by American zoölogists are ignored, and the new classification given, does not seem as adequate as that now in use by the latter.

A glossary, including numerous terms proposed by the author, and a bibliography of plant ecology complete the book. Notwithstanding the very detailed statement of contents, the lack of an index is a disadvantage.

G. M. A.

**Moore's Universal Kinship**<sup>1</sup> is intended as a protest against that attitude of the human mind that would conceive all animals other than man as man's just and legitimate prey. The author appears to have become greatly impressed by Darwin's conception of the

<sup>1</sup> Moore, J. H. *The Universal Kinship*. Chicago, Chas. H. Kerr and Co., 1906. 12mo, x + 330 pp. \$1.00.